

any additional fee required for the extension, or credit any overpayment, to Deposit Account 06-1205.

In response to the Official Action dated February 28, 2002, please amend the above-identified application as follows:

IN THE CLAIMS:

Please CANCEL claims 13, 17, 21 and 23 without prejudice to or disclaimer of the recited subject matter.

Please AMEND claims 11, 12, 14, 16, 18, 20, 22, 24 and 26-29, and ADD claims 30-33 as follows. A marked-up copy of these claims is attached in Appendix A. For the Examiner's convenience, all claims currently pending in this application have been reproduced below:

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11. (Amended) An optical system for use in a projection exposure apparatus, said optical system comprising:
a plurality of lenses having birefringence; and
at least one optical element for substantially correcting the birefringence of said plurality of lenses.

12. (Amended) An optical system according to claim 11, wherein said at least one optical element has form birefringence.

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14. (Amended) An optical system according to claim 12, wherein said at least one optical element produces the form birefringence by a grating having a period smaller than a wavelength used.

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15. An optical system according to claim 14, wherein said grating is provided on the surface of at least one of said lenses.

16. (Amended) An optical system according to claim 11, wherein said at least one optical element has a stress distribution.

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18. (Amended) A projection exposure apparatus comprising:
an illumination system for illuminating a reticle with light; and
a projection optical system for projecting a pattern of the reticle onto a wafer, said projection optical system including a plurality of lenses having birefringence, and at least one optical element for substantially correcting the birefringence of said plurality of lenses.

19. A projection exposure apparatus according to claim 18, wherein said illumination system illuminates the reticle with slit-like light, and further comprising a scanning device for simultaneously scanning the reticle and the wafer in a widthwise direction of the slit-like light, at a speed ratio corresponding to a projection magnification of said projection optical system.

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20. (Amended) A projection exposure apparatus according to claim 18, wherein said at least one optical element has form birefringence.

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22. (Amended) A projection exposure apparatus according to claim 20, wherein said at least one optical element produces the form birefringence by a grating having a period smaller than a wavelength used.

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24. (Amended) A projection exposure apparatus according to claim 18, wherein said at least one optical element has a stress distribution.

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25. A projection exposure apparatus according to claim 24, wherein said at least one optical member is arranged so that a distribution, including a distribution of stresses produced by said at least one optical member, is effective to cancel the birefringence of said plurality of lenses.

26. (Amended) A device manufacturing method comprising the steps of:
exposing a wafer to a device pattern by use of a projection exposure apparatus as recited in claim 18; and
developing the exposed wafer.

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27. (Amended) An optical system for use in a projection exposure apparatus, said optical system comprising:

a plurality of optical elements each having birefringence, said plurality of optical elements being arranged so that the birefringence is substantially corrected as a whole.

28. (Amended) A projection exposure apparatus comprising:

an illumination system for illuminating a reticle with light; and


a projection optical system for projecting a pattern of the reticle onto a wafer, said projection optical system having a plurality of optical elements each having birefringence, and said plurality of optical elements being arranged so that the birefringence is substantially corrected as a whole.


29. (Amended) A device manufacturing method, comprising the steps of:

exposing a wafer to a device pattern by use of a projection exposure apparatus as recited in claim 28; and

developing the exposed wafer.

Please ADD new claims 30-33 as follows:


-- 30. An optical system according to Claim 27, wherein said optical elements comprise a plurality of lenses each having birefringence and at least one element having form birefringence.


31. An optical system according to Claim 27, wherein said optical elements comprise a plurality of lenses each having birefringence and at least one element having a stress distribution.

32. A projection exposure apparatus according to Claim 28, wherein said optical elements comprise a plurality of lenses each having birefringence and at least one element having form birefringence.

33. A projection exposure apparatus according to Claim 28, wherein said optical elements comprise a plurality of lenses each having birefringence and at least one element having a stress distribution. --

REMARKS

Applicant requests favorable reconsideration and allowance of the subject application in view of the preceding amendments and the following remarks.